# SCIENCE & GOVERNMENT REPORT

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## *Visiting Russians Score a Hit At National Academy of Sciences*

*Washington was gaga over the visiting Russians last week, and nowhere more so than at the traditionally reserved National Academy of Sciences, where an 11-member contingent of senior Soviet research administrators, economists, and Americologists met for three hours on December 8 with some 40 American mandarins of academe, high-tech industry, foundations, think tanks, etc. Following the meeting, the Soviets unexpectedly departed for a pow-wow elsewhere, the Americans huddled over lunch, and then Academy President Frenk Press, normally non-effusive, briefed the news media, sounding at times like an observer fresh from miraculous events. Following are excerpts, transcribed and edited by SGR.*

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*Q. What was the most important result of your discussions?*

***Press.*** We asked that question among ourselves, and just about everyone agreed that we were witnessing a revolution, perhaps as profound as any in this century in terms of its potential impact. The Russians came over, with utter frankness, and talked about their plans for restructuring their economic system, their management system, for decentralizing their economy, for letting, under some controlled conditions, market forces and pricing prevail. They talked about providing incentives for their managers and their workers. They talked about

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the importance of restructuring education, to become a knowledge-based society. For many of the Americans in the room, this was their first view of what they've been reading and hearing about. And they were still surprised at the utter frankness.

The decrease in the standard of living in recent years—the Russians admitted to. Their first experiments with democracy, in having multiple candidates at the very local level, to begin with. The beginnings of an ecological movement in the Soviet Union was described by the editor of one of their biggest circulation journals, *Novy Mir*. How social forces and groups can oppose the bureaucracy. Their success in killing the project to have the Siberian rivers flow southward instead of northward. And how the popular movement and the press and the magazines were able to stop that. It was a very impressive story. That's the most important message we got. They're embarked on a very profound experiment and they're betting the future of their country on its

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## Research Agencies Grappling With Growing Budget Confusion

Echoing a common view among his fellow managers of the federal research enterprise, an NSF official—with a hiss of exasperation—repeated that well-worn line of Capital life: "It's a helluva way to run a government." The reference this time was to the extraordinary uncertainty that has gripped federal spending plans ever since the stock market bust traumatized politics into looking serious about the federal deficit.

The consensus to cut spending and increase revenues came on top of a long-running failure to complete work on appropriations bills in time for the beginning of fiscal 1988, on October 1. As a result, with the coming of the

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## In Brief

**Starting from a far-back position, Japanese industry now nearly matches American firms in overall share of sales devoted to company-financed R&D, Edwin Mansfield, Director of the Center for Economics and Technology, University of Pennsylvania, told the Congressional Joint Economics Committee at a hearing Dec. 2 on R&D and competitiveness. In 1970, Japanese firms devoted 1.3 percent of sales to R&D, while American firms spent 2.2 percent. Latest figures: Japan, 2.7; US, 2.8.**

*The NIH consensus conference was devised to counter carping about spotty efforts to move NIH research from lab to bedside. How is it working? Poorly, according to a RAND Corp. study of utilization of consensus recommendations on breast cancer, cesarean childbirth, and heart bypass surgery. The conferences "mostly failed to stimulate change in physician practice," says RAND. (Reprints of a summary, from the Nov. 20* Journal of the American Medical Association, *are available from RAND Corp., 1700 Main St., Santa Monica, Calif. 90406; attn. David Kanouse; tel. 213/393-0411.)*

**The enrollment of women and minorities in science and engineering studies continues to slide, following rapid increases in the 1970s and early 1980s, according to the 1987 edition of *Professional Women and Minorities*, published by the Commission on Professionals in Science and Technology. In engineering, for example, the percentage of freshman women rose from 2 percent in 1970 to 17 percent in 1983, and fell to 15 percent in 1986. From 1979 to 1985, the percentage of blacks among new first-degree graduates in science declined from 6.4 to 5.6 percent of the total. (*Professional Women and Minorities*, 272 pp., $85, from Commission on Professionals in Science and Technology, 1500 Massachusetts Ave. NW, Suite 831, Washington, DC, 20005; tel. 202/223-6995.)**

# . . . R&D Spending Restrained as Uncertainty Continues

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new year, federal spending was legally sanctioned under a continuing resolution—which has often happened before while Congress hurried to catch up on its work. But in this instance, there was the added factor of Gramm-Rudman-Hollings dictating a $23-billion cut—equally divided between civilian and military programs—to meet deficit-reduction requirements. Looking to the grandstands, Congress and the White House agreed to $76 billion over two years, with $30.2 billion in cuts and revenue increases—many of them of dubious reality—agreed upon as the figure for this year.

On the civilian side, while the details of the alleged deficit-reduction are being worked out, the sequestration formula requires that spending be held to 91.5 percent of the fiscal 1987 level. The research agencies, with a clientele noted for gross anxieties arising from long lead times for assembling staff and equipment, have responded to the wondrous confusion in various ways. Playing it safe, the National Science Foundation has throttled back its spending to 75 percent of its 1987 levels while waiting for the final word on the funds it will have for a fiscal year already past the two-month mark. At the National Institutes of Health, funds for some long-term grants are being paid out in three-month segments to guard against reductions that might leave the till low or empty toward the end of the fiscal year.

## *Competitiveness Sells*

Given the bizarre budgetary situation, what are the prospects for research-related matters on the eve of the final year of the Reagan Administration? There's little firm ground for predictability, but some things are reasonably clear. One is that civilian research, particularly when it's linked to industrial competitiveness, is regarded with high favor on Capitol Hill; at the same time, military research, which has hogged R&D budget growth throughout the Reagan Administration, is on the skids. In R&D as on other issues these days, Congressional sentiments are important since the White House, despite a post-summit glow, is in a terminal political recession.

The pattern of legislative affection for R&D showed up clearly last month in the conference report of the House and Senate Armed Services Committees. The Administration requested $5.7 billion for the Strategic Defense Initiative, and received an authorization for $3.6 billion. SDI has lost out in the past in Congress, but this cut was the biggest so far, in terms of request and outcome.

At the same time, the Armed Services Committees voted a startup authorization of $100 million a year for two years for Sematech, the 16-company consortium that's supposed to counter Japan's growing prowess in semi-conductor manufacturing techniques. The government fund openly casts the Pentagon as a counterpart of Japan's vaunted Ministry of International Trade and Industry, a role that DoD has quietly filled before. But this time, it's out in the open, with industrial competitiveness as the rationale—and little quibbling from Capitol Hill.

Will plans for a reduced Pentagon budget, announced by Defense Secretary Frank Carlucci, result in R&D funds being redeployed to the civilian sector? The stock answer is that the federal budget process doesn't pro-

*(Continued on page 3)*

## *The Top 15 for SDI Contracts*

According to the Council for Economic Priorities, a New York policy-research organization, the top 15 recipients of Strategic Defense Initiative contracts in FY 1983-86 were:

| Organization | Dollars, in 1000s | % of total |
|---|---|---|
| Lockheed | $720,961 | 9.8 |
| General Motors | 612,698 | 8.4 |
| Boeing | 373,697 | 5.1 |
| TRW | 373,117 | 5.0 |
| Lawrence Livermore | 366,685 | 5.0 |
| EG&G Inc. | 360,300 | 4.9 |
| McDonnell Douglas | 338,224 | 4.6 |
| MIT Lincoln Lab | 327,542 | 4.5 |
| Los Alamos | 285,588 | 3.9 |
| General Electric | 260,797 | 3.6 |
| Sandia Nat. Lab | 266,530 | 3.1 |
| Rockwell Intern. | 197,405 | 2.7 |
| Teledyne Inc. | 181,145 | 2.5 |
| Gencorp Inc. | 175,455 | 2.4 |
| SDI Institute | 125,000 | 1.7 |

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Editor and Publisher
**Daniel S. Greenberg**

Associate Publisher
**Wanda J. Reif**

European Correspondent
**Francois Seguier (Paris)**

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# . . . Plans for Big NSF Boost Collide with Deficit Cuts

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vide for formal tradeoffs from the military to the civilian. But Congressional passions can make up that lack. One small sign is that even in this tumultuous budget year, Congress is backing growth in the Pentagon's support of academic research through the University Research Initiative—DoD's own version of the National Science Foundation.

One budgetary fate that now seems certain is a faltering in the first step of the Administration's plan to double the NSF budget by 1992. But the outcome does not come from lack of Congressional enthusiasm for NSF. Rather, NSF is the victim of its chance placement under a House Appropriations Subcommittee that also has jurisdiction over several other political favorites, notably the Veterans Administration and the Department of Housing and Urban Development, plus the financially stricken NASA.

## *Senate Backs NSF*

The NSF increase for this year was set by the White House at $270 million, which was to bring the Foundation up to nearly $1.9 billion. The Senate, repudiating the NSF appropriations chairman in that chamber, William Proxmire, voted for nearly the full request, rather than the zero increase that Proxmire wanted. But in the House, Subcommittee Chairman Edward P. Boland (D-Mass.), after some public handwringing over how to share the total sum allocated to his subcommittee, said that neglected public housing needs should come ahead of rapid growth for NSF.

Just how the Foundation will fare in the final shakeout won't be known until the Congress-Executive budget marathon for 1988 is completed. But in Congress and at NSF, there's a general expectation that funds for this fiscal year will only slightly exceed last year's budget, and that when inflation is factored in, NSF will experience little or no "real" growth.

No one expects that to be the case with the National Institutes of Health, which, as usual, come out of the Congressional appropriations process this year with increases vastly beyond the budget reductions that the White House had called for in anticipation of the traditional legislative largess. While NIH will have to give up some of it to satisfy the demands for federal frugality, the outcome is expected to be less growth than hoped for, rather than the NSF standstill plight.

While these budget strains and uncertainties wrack the federal research bureaucracy, even worse difficulties are being pondered. These concern the "big ticket" projects currently in the budget, or in advanced stages of getting there. Among them are the Space Shuttle, the Superconducting Super Collider, the human genome project, fusion research, NSF's still-small but swelling program of research centers, the Space Telescope, plus others. The weight of the "mortgage" payments for these costly and long-running ventures is increasingly of concern in research-policy circles. (As noted in In Print, P. 8, the Science Policy Research Division of the Congressional Research Service is on the subject.)

## *Link to Soviets?*

Given the difficulty of saying no to any of these ventures, the obvious solution is cost-sharing with other nations. Last week, the visiting Russians were talking that up, with emphasis on collaboration in space and in fusion, and their American hosts listened with interest.

However, the final year of the Reagan Administration is not likely to be a period of innovation in science affairs. At the White House level, there's a vacuum in research policymaking. Within the research agencies, the task of the moment is simply to keep things running when the fundamental matter of the budget total is unknown and the 1988 fiscal year is dribbling away.—DSG

## Job Changes and Appointments

***Stephen A. Merrill*** to the newly created post of Director of Government Affairs, National Academy of Sciences. He was formerly with the Center for Strategic and International Studies and the staff of the Senate Commerce Subcommittee on Science, Space, and Technology.

***James R. Schlesinger,*** Secretary of Defense, Energy, and Director of the CIA in the Nixon and Ford Administrations, to Chairman of the Board of Trustees, MITRE Corp.

***William G. Howard,*** former R&D Director, Motorola Inc., to Senior Fellow, National Academy of Engineering, where he will direct a study of experiences in bringing new industrial products and processes to market.

***Geraldine Kenney-Wallace,*** Professor and Chairman of the Research Board, University of Toronto, to Chairman, Science Council of Canada.

## *SGR Holiday Schedule*

The next issue of *Science & Government Report* will be published January 15, 1988.

# . . . Science Ranks High with Gorbachev, NAS Head Says

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success. And they're telling everybody about it, in an open and frank way, answering all questions.

***Q.** What changes do you see coming in relations between the two scientific communities?*

***Press.*** The ability of Russian scientists to travel, especially the younger scientists, is inhibited by a highly centralized scientific system where decisions are made by a very few people at the top. To me, the most important thing that could happen to Soviet science is to relax that system, to decentralize it, to allow for individual peer-review project support, and, most important, to allow for free communication and travel.

## *Social Science Cooperation*

The Soviet scientific effort is a very strong one. The resources that are invested are very large and the talent of their scientists is excellent. What's missing is a very cheap ingredient—letting their people travel and receive visitors as is the situation in Western Europe and Japan and other countries.

***Q.** Did they indicate that's in the process of happening?*

***Press.*** It wasn't one of the topics on the agenda. But I feel that the fact that the Secretary General is traveling with eight or ten members of the Soviet Academy of Sciences shows that he's elevated science in his priority. What I've described is, I'm sure, the message he's received from his scientists.

***Q.** Do you see any areas where we can develop cooperation?*

***Press.*** Yes. Some of the Soviet presentations called for greater discussions between economists and social scientists of both countries through the Academy exchange program. That's an interesting new idea which I think we should examine. There's enormous interest in what's happening in the Soviet Union on the part of American economists.

On education, Velikhov [Vice President of the Soviet Academy] announced that by 1992, they hope to have one million computers in Soviet [precollege] schools, with modems and an electronic network for students. We are very rapidly moving to large numbers of personal computers in our schools, as teaching aids. The big impediment in our country is software. There's not enough software to make them work—so they're just sitting there. And the teachers don't know how to use them. The Russians are good at developing software. The big impediment in their country is hardware.

With a million computers, as John Scully [President of Apple Computer, Inc.] said to them, the quality control has to be impeccable. Because if it isn't, there's no one around the school to fix—in our schools or their schools—a personal computer if something goes wrong. So, there may be some areas in education, using these new techniques, where there's a possibility of cooperation.

***Q.** What's the purpose of those million computers?*

***Press.*** First of all, as an educational tool, teaching subjects by interaction. Secondly, if both societies realize that their future will be based on the acquisition and the use of knowledge, then this is a way to train a whole generation of future workers. The [Soviet] computers would be linked to central information repositories. These are very grandiose plans, but these are the things we hear about.

***Q.** Will the Soviet plans involve American computers?*

***Press.*** There are limitations on the exports at the present time. That's a problem.

***Q.** Then where are the areas of cooperation on this subject?*

***Press.*** In software, certainly. They're very good at software. And just how it's used, how you prepare the infrastructure for receiving these computers, how you prepare the teachers. There's an experiment sponsored by the Carnegie Corporation, where four Russian schools are tied together by electronic mail to four American schools, as an experiment.

***Q.** Did the issue of human rights come up?*

***Press.*** Yes. They had a legal expert who was describing some of the recent laws that have been passed in the Soviet Union in the past year . . . . They announced what most of us knew already about the first laws along these lines, emigration to recombine families. That went into effect in 1987. But the bigger issue of emigration on any grounds was not fully addressed.

***Q.** On the exchange of economic and social scientists, how would that work?*

***Press.*** It would be workshops and symposia.

## *Joint Research Projects*

***Q.** Is it feasible for the two countries to get together and cooperate in joint scientific research projects?*

***Press.*** They exist already. The environmental agreement is a very good agreement. In energy, there certainly has been cooperation in sharing information. The Tokamak, the main technique we're using today on fusion, was invented in the Soviet Union, and they brought that technology to our attention. There is some talk of joint funding to build the next generation of fusion facilities. These are multi-billion-dollar machines, so there might be some global effort. There's increasing talk of cooperation in space. One of the Soviets proposed a program of global monitoring from space

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# Reagan's Science Aide Cautious on Expanded Soviet Ties

While Washington gushed with Soviet-American amity last week, White House Science Adviser William R. Graham was expressing dour views of the prospects for increased scientific and technological cooperation between the two countries.

Graham, a nuclear-weapons engineer identified with the now-fading hardline wing of the Reagan camp, voiced his doubts at one of the regular evening gatherings of Washington's science-policy *apparatchiks* sponsored by the George Washington University Graduate Program in Science, Technology, and Public Policy. Asked for a summit forecast in regard to research and development matters, Graham responded, in part:

"We are always exploring the possibilities in that realm. But there is great concern, of course, now—and there has been for many years—that the Soviets are making a large and very focused and determined effort to acquire from the West technologies of military significance. They attempt to buy it when they can; they attempt to steal it when they can't buy it."

In an apparent reference to opposition to the Strategic Defense Initiative, Graham continued: "And there's another side of it, too, which is in some areas, they attempt to use various international and domestic political processes to try to impede the pursuit of science and technology in areas that they consider will put them at a relative disadvantage, particularly the military areas.

"That's not the foundation for a very large and warm working relationship in science and technology," he added. "In fact, it's something that has to be worked [out] in view of and with concern for as a major component of any science and technology cooperation with the Soviets, and will necessarily put a very substantial limitation on that cooperation unless the circumstance itself is removed. We hope that will happen over time, and we'll keep probing, both in the larger realm [of Soviet-American relations] and in specific cooperative processes—processes which involve the free expression of the individuals within the Soviet Union . . . who are impeded in the pursuit of scientific activities themselves by their government.

"If and when and as those constraints become lessened by larger circumstances," Graham went on, "they will certainly be a boon for scientific cooperation with the Soviet Union, just as with any other country. But it's going to be a process of . . . building confidence and so on . . . and that's certainly what we're looking to now," Graham concluded.

The seminar, a dinner meeting held about monthly during the academic year, drew an unusual capacity audience of about 135—comprising middle-level federal R&D managers, policy analysts, Congressional staff, embassy science attaches, assorted high-tech lobbyists and consultants, plus a few reporters, The lure was Graham, who, during the first year of his now-14 months in office, made relatively few public appearances.

As many attendees commented to each other before the proceedings began, curiosity brought out the crowd—eager to hear the presidential Science Adviser of whom they had heard so much and seen so little during his tenure.

Graham, as reflected in numerous private remarks following the meeting, made an appalling impression, both with the substance of his prepared talk and his monotonic, humorless delivery. To an audience that included many whose years in Washington science affairs exceeds his months on the job, Graham offered a term-paper style history of the origins and development of the White House Office of Science and Technology Policy, including: "According to the law that established OSTP, the primary function of the Director is to provide within the Executive Office of the President advice on scientific, engineering, and technological aspects of issues that require attention at the highest levels of the government."

Questions from the audience following his talk were gentle, and the answers exposed nothing previously unknown. Asked about his relations with Reagan, Adviser Graham praised the President, humorlessly noting, among other qualities, that "the President wasn't born yesterday."

## *Soviets*

*(Continued from page 4)*

for severe environmental problems, like carbon dioxide and its potential for changing our climate; the ozone hole—these things can be monitored from space, and there's talk toward joint efforts in that direction.

They were very interested in the notion that we talk about global-survival issues—not nuclear ones, but climatic change and ozone. They described the importance of space monitoring and the importance of cooperation between the two predominant space-faring nations to join together in global observations.

***Q.** Were there any specific proposals for cooperation in space?*

***Press.*** They have had the initiative in proposing cooperation in space. We have been the reluctant bride. There is some cooperation, but they are proposing instrument packages on each other's spacecraft. They are accepting packages from Western European scientists. Our scientists have a problem in that they're not getting permission from our government.

# France: A Nobel Glow on a Bleak Scientific Scene

*Paris.* France's one-third share in the Nobel Prize for Chemistry this year—through the award to Jean-Marie Lehn, of the University of Strasbourg—was a notably happy event in an otherwise bleak period for the scientific community here. The rarity of the coveted prizes in this country feeds paranoia about Stockholm's preference for Anglo-Saxons. The good news was thus doubly welcome.

The main difficulty in science affairs has been a long deadlock in decision-making on basic policy issues at the *Centre National de la Recherche Scientifique* (CNRS), the government's $1-billion-a-year, nationwide research enterprise. In June, 1986, following the electoral victory of the Right, the unprecedented occurred when the Director of CNRS, Pierre Papon, was dismissed—just a few months after he had been re-appointed to a three-year term by the previous government. In the turmoil that followed, the CNRS Board did not meet again until July 1987. In the meantime, the recruitment of new researchers was stalled.

At the upper political levels of the research and education hierarchy, the situation has not been much better. The catastrophic reign of Alain Devaquet as Minister of Research and Higher Education came to an end in December 1986 when he resigned under pressure following nationwide student demonstrations aroused by proposals to restrict university admissions. With this mess as his legacy, the next Minister, Jacques Valade, opted for a strategy to keep out of public view and political trouble. The result is that, one year later, the Ministry of Research and Higher Education drifts aimlessly. It is rumored in the corridors of Valade's prestigious headquarters—the old buildings of the Polytechnic Institute, created during the Revolution—that Valade is more interested in becoming the Mayor of his hometown, Bordeaux, than in advancing the cause of science.

The Ministry of Finance, naturally, has its own ideas on research and the economy. In July, it put forth a supplementary tax credit, totaling about $100 million, for industrial enterprises that expand their research activities. An idea which has been around since at least 1983, the R&D tax credit is widely viewed with skepticism, even in industry. Furthermore, reports coming here from the American experience with this tax device are not especially reassuring. But with the immobilization of the agencies nominally responsible for research policy, others naturally move in to assert authority.

The westward brain drain, off and on a European concern, is once again getting attention. Though Frenchmen are traditionally less inclined to move abroad than their counterparts in Britain, West Germany, and Italy, the situation is noted with new concern here. Between 1982 and 1986, about 6800 researchers from Western Europe emigrated to the United States. The flow has reached the point where the European Community has come up with a plan, endowed with $200 million spread over five years. Its purpose is to stop the exodus by offering grants to restless European researchers. The main condition is that they join a laboratory in a Community country other than their own.

The somnolence in research policy has not improved the image of French technology in the US, or done anything to shake off the now-disdained image of France as the land of wine, fashions, perfumes, and cinema, but not advanced technology. Some sociologists at a research institute in Paris recently conducted a telephone survey of 791 American industrial leaders and government officials. The conclusion, according to Michel Berty, President of the French Association for Science, Industry and Technology: "The image of French technology in the US is even worse than in reality." France was considered to be competitive with the US in aeronautics, space, and nuclear energy. In other fields, the survey found, the American respondents rated France behind West Germany, Japan, and Britain.

The specter of huge American and Japanese research enterprises dominating science and technology provides the impetus for Europe to pool its resources in many fields of advanced technology. But R&D collaboration involving 12 nations is not an easily managed affair. Decisive power rests with the big three—France, Britain, and Germany—but frugal Britain frequently parts company with its partners on issues of big spending. Such was the case this year, when British vetoes blocked budget decisions for seven months until a tentative compromise was reached in September calling for $20 billion, spread over five years, for some 20 major R&D programs. At least 15,000 researchers, in public and private laboratories and in universities, will be affected by this budget.

Three of these programs will start at once, while the fate of the others remains to be worked out in further negotiations among the 12 member nations. The program known as RACE, now going into its second phase, is aimed at developing communications technologies employing optical fiber networks. About $600 million will be provided by the EC to firms that provide matching funds. Cancer research will receive $70 million and $80 million will be provided for R&D for developing countries.

In space, which is negotiated directly among the participating governments, rather than through the Brussels system, three major projects are in the works: Ariane 5 (the French-dominated launch system), the

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# Science Panel Chilly on Paranormal Weapons for Army

From ***Enhancing Human Performance: Issues, Theories, and Techniques*** (299 pp.), report from the National Academy of Sciences of a study commissioned by the US Army Research Institute. The study, conducted by a committee of psychologists chaired by John A. Swets, of Bolt Beranek and Newman, Inc., reviewed a variety of techniques for improved learning and performance, including the claims of parapsychologists, some of whose laboratories were visited. The NAS report is available for $32.50 hardbound ($22.50 paperbound) from National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 334-3313.

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Some people, including military decision makers, can imagine potential military applications of two broad categories of psychic phenomena. In their view, ESP (extrasensory perception), if real and controllable, could be used for intelligence gathering and, because it includes "precognition," ESP could also be used to anticipate the actions of an enemy. It is believed that PK (psychokinesis), if realizable, might be used to jam enemy computers, prematurely trigger nuclear weapons, and incapacitate weapons and vehicles . . . . One suggested application is a conception of the "First Earth Battalion," made up of "warrior monks," who will have mastered almost all the techniques under consideration by the (NAS) committee, including the use of ESP, leaving their bodies at will, levitating, psychic healing, and walking through walls . . . .

Although proponents of ESP have made sweeping claims, not only for its existence but also for its potential applications, an evaluation of the best evidence does not justify such claims . . . . Nor does scientific evidence offer support for the existence of psychokinesis—that is, the influence of thoughts upon objects without the intervention of known physical processes . . . .

Two of the military officers who briefed us during our first meeting urged the committee to give serious consideration to paranormal phenomena and related parapsychological techiques. They described a variety of such phenomena that they felt had military potential, either as threats to security or aids to defense.

## *France*

*(Continued from page 6)*

Hermes Shuttle (a mini-version of the American system), and the Columbus space lab (which is intended to plug into the American space station).

All of the participating nations have agreed to support the Ariane project. It is the most certain to succeed, and, of its $5 billion cost, France will bear 45 percent and Germany 22 percent. Hermes, budgeted for $6 billion, does not appeal too much to the Germans, who feel it is too ambitious and of uncertain purpose. In response to this coolness, the Ministers of Research and Industry in Europe came up with a solution at a meeting at the Hague last month. The German Minister of Research and Technology, Heinz Reiserhuber, persuaded the French to limit the budgetary commitment for Hermes and Columbus (estimated at $5-6 billion) to an exploratory phase of three years. The apparent hope is that the period will entail a sufficiently high level of expenditures to persuade the Soviets and the US that Europe is serious about advanced technology.

But there's a hole in the Old World's banner of technological independence. Refusing to join in, the British Minister of Trade and Industry, Kenneth Clarke, referred to the space projects as "despotic dreams." They will proceed without Britain, which has adopted rigorous policies of matching its R&D ambitions to its means. The same cannot be said of the French. It is difficult to identify the R&D policies here. The reason for that is that there is no coherent source of policymaking.—FS

## *In Print*

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the Science Policy Research Division of the Congressional Research Service, the report ranges over a large mass of topics, including Pentagon support of academic research, industrial spin-off, export controls, manpower, advisory mechanisms, etc.

Some of the previously published volumes (all were listed in SGR March 1, 1987) are already out of stock. Still to come from that long-ago committee study is a final report.

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# In Print: Space, Engineers, Neonatal Care, NIH, Etc.

***Space Technology to Meet Future Needs*** (171 pp.), report from the National Academy of Sciences, commissioned by NASA, says the Shuttle squeezed out support for "developing the technology base required for the missions of the next century." The study, produced by a 16-member panel chaired by Joseph F. Shea, Raytheon Senior Vice President for Engineering, recommends development of various systems, including advanced propulsion, human life support, autonomous robotics, space power supplies, and sensors.

**Available without charge from the National Academy of Sciences, Aeronautics and Space Engineering Board, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-2855.**

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***Profiles—Mechanical Engineering: Human Resources and Funding*** (NSF 87-309; 226 pp.), second in a new NSF series on the science and engineering disciplines. Like the first (***Chemistry: Human Resources and Funding;*** NSF 87-307), this one provides compendious data on numbers, jobs, education, finances, etc.

**Both reports are available without charge from NSF, Division of Science Resources Studies, 1800 G St. NW, Washington, DC 20550; tel. 202/634-4634.**

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***Neonatal Intensive Care for Low Birthweight Infants: Costs and Effectiveness*** (75 pp.), the 38th report in the Congressional Office of Technology Assessment's case studies of health-care technologies, notes increasing survival rates for very low birthweights, "with the greatest statistical improvement, recently, in the 750- to 1000-gram" groups. The report, prepared under an advisory panel chaired by Harvey Feinberg, Harvard School of Public Health, states that "As mortality rates decline, there are larger absolute numbers of both handicapped and normal surivors." But it notes, too, that while survival is related to the type of hospital in which the birth occurs, some less-capable hospitals "are not appropriately transferring high-risk women and newborns because of a desire to offer competitively a full array of services even when those services do not meet the needs of the patients."

**GPO Stock No. 052-003-01089-5; $3.75, US Government Printing Office, Superintendent of Documents, Washington, DC 20402; tel. 202/783-3238.**

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***NIH Data Book 1986*** (64 pp.), a pocket-size assemblage of tables and charts covering NIH budgets, numbers and sizes of grants, geographic distribution, etc., with most items tracked from 1976 to 1985.

**Available without charge from NIH, Office of Program Planning and Evaluation, Bethesda, Md. 20892; tel. 301/496-9291.**

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***Congressional Research Service Review,*** 10-times-yearly, in magazine format, summarizes and discusses studies and reports by the prolific CRS, part of the Library of Congress. Among the CRS' components: the Science Policy Research Division, a heavy producer for Capitol Hill's research-related committees. In February, the CRS ***Review*** is scheduled to carry a special section on R&D budget strains arising from "big-ticket" items such as the space station and the Superconducting Super Collider.

The ***Review*** is for sale through the US Government Printing Office. But there's a difficulty after that: the reports summarized and discussed in the ***Review*** are obtainable only with the assistance of a member of Congress. They usually respond to a request. Be sure to specify the CRS title and identifying numbers of the documents sought.

**The CRS *Review* (GPO Stock No. 73-009-00000-3) is available at $9.50 for a one-year subscription from USGPO, Superintendent of Documents, Washington, DC 20402; tel. 202/783-3238.**

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***Science Support by the Department of Defense*** (448 pp.), the 37th, and final, volume from the 1985-86 study of national science policy conducted by a task force of the House Science and Technology Committee. Prepared by

*(Continued on page 7)*

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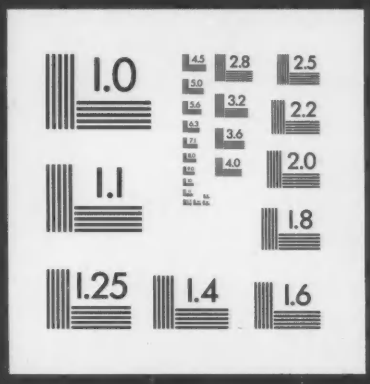
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